

## ABSTRACT

An apparatus and method for controlling the phase of a tunable laser is provided.

Stabilization of the mode of a laser beam is provided as the laser is tuned to a target frequency. For one embodiment, a laser generates a reference beam and an output beam.

- 5 The power of each of beam is measured by optical detectors, and a ratio thereof is utilized to detect when a mode hop occurs as the laser is coarsely tuned. The average of the pre and post mode hop ratios is utilized as a control setpoint while finely tuning the laser to the target frequency. Wavelength lockers, optical power dividers and optical detectors are utilized to determine power levels of the reference and output beams while also monitoring frequency
- 10 characteristics thereof. A control unit utilizes the outputs from the wavelength locker to control the operation of the extended cavity laser during and after tuning.

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